UC Berkeley CIRM Center of Excellence

Grant Award Details

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Grant Type: Major Facilities

Grant Number: FA1-00610

Investigator:

Name:	George Breslauer
Institution:	University of California, Berkeley
Type:	PI

Award Value: $20,183,500

Status: Closed

Grant Application Details

Application Title: UC Berkeley CIRM Center of Excellence

Public Abstract:

The Stem Cell Center is a cornerstone program of campus biomedical research that capitalizes on our strengths in basic and preclinical research, as well as collaborations with neighboring research institutions, to support high impact investigations with several major emphases: (1) stem cell self-renewal, (2) hematopoietic differentiation, (3) neural differentiation and neurodegeneration, (4) cardiovascular and skeletal muscle differentiation, and (5) cancer and cancer stem cells. The proposed CIRM Center of Excellence (CoE) will be the focal point for these efforts and will be critical to our ability to expand this program of world class basic and preclinical stem cell research.

The CoE will assemble a critical mass of investigators who will promote interdisciplinary collaborations among campus biologists, engineers, and physical scientists to make important discoveries that lay the foundation for developing new therapies for human disease. Basic investigations of genes that control stem cell self-renewal and pluripotency will aid the engineering of synthetic microenvironments for the large scale, safe expansion of human embryonic and other stem cells for cell replacement therapies and diagnostic applications. Likewise, elucidation of fundamental mechanisms of neurodegenerative disease will lead to new regenerative medicine therapies for Alzheimer's, Lou Gehrig's, and other diseases, as well as retinal diseases that cause blindness. Furthermore, insights into the mechanisms of muscle stem cell differentiation will aid our preclinical research in novel cardiovascular therapies. Importantly, the CIRM CoE will be located in a new building adjacent to several other disease-focused research programs, including neuroscience, cancer, and computational biology. Close interactions among these programs, as well as with leading bioethicists, will greatly benefit our basic and translational stem cell research.

The CIRM CoE will also enable an ambitious program to recruit five additional stem cell researchers, two in basic discovery and three in translational research, to complement seven established investigators in the CoE. Important areas of research that build and extend upon the strengths of the Stem Cell Center include the use of stem cells to study human disease mechanisms, the creation of new animal disease models, and the development of novel cell replacement therapies.

In addition to state-of-the-art laboratory space, the CIRM CoE and surrounding building will house important core facilities, including a vivarium, animal imaging, molecular and cellular imaging, flow cytomery, and cell culture core, each crucial for campus-wide efforts to translate stem cell research into new therapies. The result will be the focal point of the Stem Cell Center, driving the integration of biology, the physical sciences, and engineering to create a world class environment to translate basic and preclinical stem cell research towards new therapies for human disease.

Statement of Benefit to California:	The major objectives of our Stem Cell Center are to carry out the highest quality basic and translational stem cell research essential for the development of novel therapies to treat human disease; to assemble and recruit the best scientists and engineers in the rapidly advancing field of stem cell biology and regenerative medicine in order to establish a highly interactive and synergistic research community; and to foster interactions between faculty and students of the Center and world class biologists, chemists, biophysicists, computational biologists, and bioengineers. The resulting research program will greatly enhance the scientific, technological, and economic development of the State of California. The most important results, however, will be the basic and preclinical research that will lead to new therapies that directly benefit human health. The proposed CIRM Center of Excellence (CoE) for basic and preclinical research will greatly enhance our ability to achieve these objectives. State-of-the-art laboratory space and facilities will be crucial for creating a critical mass of established and new stem cell investigators and thereby further developing our interdisciplinary research culture. Our basic and discovery research program provides crucial knowledge for the development of new therapies, including processes that regulate stem cell self-renewal and differentiation, as well as mechanisms that underlie human disease, that lay the foundation for developing novel therapeutics. Furthermore, interdisciplinary research that melds biology, physical sciences, and bioengineering is necessary for translating these results towards regenerative medicine approaches and technologies to create new therapies for treating human disease. Our successful tradition of translating basic and preclinical research into the private sector will ensure that our discoveries will lead to the creation of new therapies. Furthermore, our strong record of translating intellectual property into industry, particularly in California, will benefit the technological strength and economic development of our state. Finally, the CIRM CoE will greatly aid our public mission to educate undergraduate, graduate, and postdoctoral students and researchers in high impact interdisciplinary science, technology, and ethics, thereby creating valuable human resources for the State of California.

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